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TOTAL SOLAR ECLIPSE OF 20 JUNE 1974

by

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Julena S. Duncombe

GENERAL INFORMATION

The path of the total phase of the solar eclipse of 20 June 1974 touches the earth at sunrise in the Indian Ocean between Africa and Antarctica. Traveling in a northeasterly direction the path passes over Amsterdam Island. At $4^h\ 36^m$ U. T. the path will begin to travel in a southeasterly direction and at $4^h\ 47^m$ U. T. duration of totality reaches $5^m\ 08\overset{s}{.}9$ and width of path is 217 miles. The northern limit of the path touches West Australia just south of Cape Naturaliste at $5^h\ 14^m$ U. T. and leaves West Australia east of Albany at $5^h\ 21^m$ U. T. The path continues in a southeasterly direction and leaves the earth at sunset between eastern Australia and Antarctica.

Partial phases of the eclipse of greater or less magnitude, decreasing with the distance from the path of total phase, will be visible over Madagascar, Indonesia, Australia, Tasmania, the extreme southwestern coast of South Island, New Zealand, and the Indian Ocean.

The predictions in this *Circular* are derived from the basic data in the 1974 American Ephemeris and Nautical Almanac. The arguments are in Universal Time, and the longitudes east of Greenwich are negative. The solar ephemeris is referred to the same equinox as the lunar ephemeris by applying a provisional correction of $1\overset{s}{.}34$. The value of ΔT, used in the computations, is $43\overset{s}{.}75$ ($45\overset{s}{.}09 - 1\overset{s}{.}34$).

The value of 0.2724880 for $\underline{k}$ has been used in these calculations except for the calculations of duration on the central line, where the value 0.272281 has been used by way of applying an approximate correction for the irregularities of the lunar limb. The duration tabulated in local circumstances is derived from the second and third contacts.

In the local circumstances, the angle $\underline{P}$ is the position angle of the point of contact, measured eastward from the north point of the solar limb, and the angle $\underline{V}$ is the position angle of the point of contact, measured eastward from the vertical circle.

The circumstances of the eclipse were plotted by the Nautical Almanac Office on portions of the Air Navigation Charts V30 of the U. S. Naval Oceanographic Office.

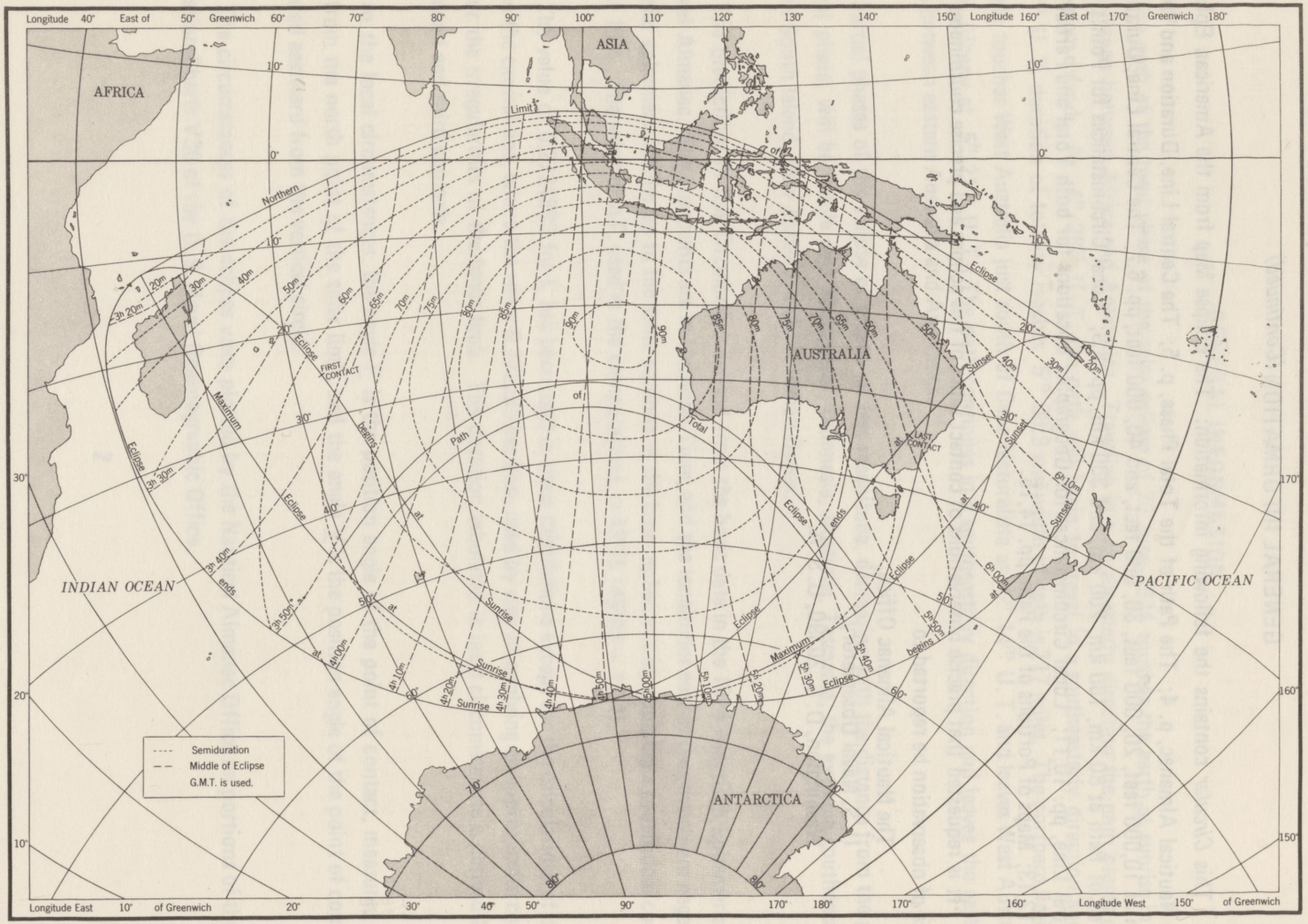
GENERAL INFORMATION *(Continued)*

This *Circular* contains the following information: The Eclipse Map from the American Ephemeris and Nautical Almanac, p. 4; The Path of the Total Phase, p. 5; The Central Line, Duration and Width of Path at 10,000 feet, 20, 000 feet, 30, 000 feet, and 40, 000 feet, pp. 6,7; The Central Line, Duration and Width of Path at 80 km, 100 km, 200 km, and 300 km, pp. 8,9; Local Circumstances for Points on the Central Line, pp. 10,11; Local Circumstances for Geographic Locations for both Total and Partial Phase, pp. 12,13; Maps of Portions of the Path, pp. 14,15.

It is requested that precise observations of contact times of this eclipse and precise coordinates of the place of observation be reported to

The Nautical Almanac Office,
U. S. Naval Observatory,
Washington, D. C. 20390, U. S. A.

TOTAL SOLAR ECLIPSE OF 1974 JUNE 20



PATH OF THE TOTAL PHASE

Universal Time h m	Northern Limit Latitude	Northern Limit Longitude	Central Line Latitude	Central Line Longitude	Southern Limit Latitude	Southern Limit Longitude
Limit	-44° 22′	- 58° 41′	-45° 25′	- 59° 15′	-46° 30′	- 59° 53′
3 49	-39 43.9	- 68 18.0	-43 38.6	- 62 55.9	.. .. .	... .. .
50	38 49.3	70 15.3	41 47.5	66 49.6	.. .. .	... .. .
51	38 04.8	71 52.6	40 41.0	69 12.2	-44 27.7	- 64 08.9
52	37 26.9	73 16.9	39 50.3	71 03.1	42 50.1	67 36.8
53	36 53.6	74 32.3	39 08.5	72 36.4	41 47.6	69 52.8
3 54	-36 24.0	- 75 40.7	-38 32.5	- 73 58.0	-40 59.3	- 71 40.2
56	35 32.8	77 42.6	37 32.6	76 18.3	39 44.6	74 31.5
58	34 49.6	79 29.8	36 43.7	78 17.9	38 46.8	76 49.8
4 00	-34 12.4	- 81 06.3	-36 02.4	- 80 03.5	-37 59.6	- 78 48.1
05	32 58.6	84 35.5	34 41.8	83 47.7	36 30.4	82 51.9
10	32 03.9	87 34.3	33 43.5	86 55.7	35 27.1	86 11.6
15	31 23.4	90 13.3	33 00.6	89 41.1	34 41.2	89 04.8
20	30 54.0	92 38.5	32 29.6	92 11.1	34 08.3	91 40.5
25	30 34.0	94 53.8	32 08.5	94 30.2	33 45.8	94 04.0
4 30	-30 22.0	- 97 02.0	-31 55.8	- 96 41.5	-33 32.2	- 96 19.0
35	30 17.5	99 05.1	31 50.8	98 47.2	33 26.7	98 27.9
40	30 19.8	101 04.7	31 52.9	100 49.3	33 28.5	100 32.8
45	30 28.8	103 02.3	32 01.8	102 49.1	33 37.3	102 35.3
50	30 44.3	104 59.0	32 17.4	104 48.2	33 53.0	104 37.0
55	31 06.4	106 56.3	32 39.8	106 47.7	34 15.8	106 39.2
5 00	-31 35.3	-108 55.3	-33 09.1	-108 49.3	-34 45.8	-108 43.7
05	32 11.3	110 57.6	33 46.0	110 54.3	35 23.5	110 51.9
10	32 55.2	113 04.7	34 31.0	113 04.7	36 09.9	113 06.1
15	33 47.9	115 18.9	35 25.2	115 22.8	37 06.1	115 28.8
20	34 50.8	117 42.9	36 30.3	117 51.9	38 14.0	118 03.9
25	36 06.1	120 21.0	37 49.0	120 36.7	39 36.7	120 57.0
5 30	-37 37.4	-123 19.5	-39 25.4	-123 45.2	-41 19.8	-124 17.8
32	38 19.7	124 39.0	40 10.6	125 10.1	42 08.8	125 49.6
34	39 06.2	126 04.7	41 00.8	126 42.5	43 03.9	127 31.0
36	39 57.8	127 38.1	41 57.2	128 24.6	44 06.9	129 25.1
38	40 55.8	129 21.6	43 01.6	130 19.8	45 21.0	131 37.5
40	42 02.1	131 18.8	44 17.3	132 34.0	46 52.1	134 19.2
5 42	-43 20.4	-133 36.0	-45 50.8	-135 18.6	-48 55.9	-137 58.7
43	44 05.9	134 55.6	46 48.5	137 00.3	-50 26.9	-140 41.0
44	44 57.6	136 26.0	47 59.0	139 05.0	.. .. .	... .. .
45	45 58.2	138 12.3	49 35.4	141 57.0	.. .. .	... .. .
Limit	-52 12	-149 28	-53 10	-148 30	-54 10	-147 28

CENTRAL LINE OF TOTAL PHASE

Universal Time	10,000 Feet		20,000 Feet		30,000 Feet		40,000 Feet	
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
h m	° ′	° ′	° ′	° ′	° ′	° ′	° ′	° ′
3 49	-43 22.0	- 63 25.8	-43 07.2	- 63 52.1	-42 53.6	- 64 15.9	-42 41.0	- 64 37.6
50	41 38.7	67 03.6	41 30.2	67 17.0	41 21.9	67 30.0	41 13.8	67 42.6
51	40 34.1	69 22.3	40 27.4	69 32.2	40 20.7	69 41.8	40 14.2	69 51.3
52	39 44.4	71 11.2	39 38.6	71 19.3	39 32.8	71 27.1	39 27.1	71 34.9
53	39 03.2	72 43.3	38 57.9	72 50.1	38 52.7	72 56.9	38 47.6	73 03.5
3 54	-38 27.6	- 74 04.1	-38 22.8	- 74 10.1	-38 18.0	- 74 16.0	-38 13.3	- 74 21.9
56	37 28.3	76 23.2	37 24.1	76 28.1	37 19.8	76 32.9	37 15.6	76 37.7
58	36 39.8	78 22.0	36 35.9	78 26.2	36 32.0	78 30.3	36 28.2	78 34.3
4 00	-35 58.7	- 80 07.1	-35 55.1	- 80 10.7	-35 51.5	- 80 14.2	-35 47.9	- 80 17.8
05	34 38.7	83 50.4	34 35.5	83 53.1	34 32.3	83 55.7	34 29.2	83 58.4
10	33 40.6	86 57.8	33 37.7	87 00.0	33 34.8	87 02.1	33 31.9	87 04.2
15	32 57.9	89 42.8	32 55.2	89 44.5	32 52.4	89 46.2	32 49.7	89 47.9
20	32 27.0	92 12.5	32 24.4	92 13.9	32 21.8	92 15.3	32 19.3	92 16.7
25	32 06.0	94 31.3	32 03.4	94 32.4	32 00.9	94 33.6	31 58.4	94 34.7
4 30	-31 53.4	- 96 42.4	-31 50.9	- 96 43.3	-31 48.5	- 96 44.2	-31 46.0	- 96 45.1
35	31 48.4	98 47.9	31 46.0	98 48.7	31 43.5	98 49.4	31 41.1	98 50.1
40	31 50.5	100 49.8	31 48.1	100 50.3	31 45.7	100 50.8	31 43.3	100 51.4
45	31 59.4	102 49.5	31 57.0	102 49.8	31 54.6	102 50.2	31 52.2	102 50.5
50	32 15.0	104 48.3	32 12.6	104 48.5	32 10.2	104 48.7	32 07.8	104 48.8
55	32 37.3	106 47.7	32 34.9	106 47.7	32 32.4	106 47.7	32 30.0	106 47.7
5 00	-33 06.6	-108 49.1	-33 04.1	-108 48.9	-33 01.7	-108 48.7	-32 59.2	-108 48.5
05	33 43.4	110 53.9	33 40.8	110 53.5	33 38.3	110 53.1	33 35.7	110 52.7
10	34 28.3	113 04.0	34 25.6	113 03.4	34 23.0	113 02.8	34 20.4	113 02.2
15	35 22.4	115 21.9	35 19.6	115 21.0	35 16.9	115 20.1	35 14.1	115 19.3
20	36 27.4	117 50.7	36 24.4	117 49.5	36 21.5	117 48.3	36 18.6	117 47.1
25	37 45.8	120 35.1	37 42.6	120 33.5	37 39.4	120 31.9	37 36.2	120 30.3
5 30	-39 21.9	-123 43.0	-39 18.4	-123 40.8	-39 14.8	-123 38.7	-39 11.3	-123 36.5
32	40 06.9	125 07.6	40 03.2	125 05.1	39 59.5	125 02.6	39 55.8	125 00.1
34	40 56.8	126 39.6	40 52.9	126 36.7	40 48.9	126 33.9	40 45.0	126 31.0
36	41 52.9	128 21.2	41 48.6	128 17.8	41 44.4	128 14.5	41 40.2	128 11.1
38	42 56.9	130 15.7	42 52.2	130 11.6	42 47.6	130 07.6	42 43.0	130 03.6
40	44 12.0	132 28.8	44 06.8	132 23.7	44 01.6	132 18.7	43 56.4	132 13.7
5 42	-45 44.5	-135 11.7	-45 38.2	-135 04.9	-45 32.1	-134 58.2	-45 25.9	-134 51.6
43	46 41.3	136 51.8	46 34.2	136 43.6	46 27.2	136 35.4	46 20.3	136 27.5
44	47 50.3	138 53.9	47 41.9	138 43.2	47 33.6	138 32.7	47 25.4	138 22.5
45	-49 23.3	-141 39.6	49 11.7	141 23.2	49 00.6	141 07.6	48 49.9	140 52.8
46	.. .. .	... .. .	-52 18.8	-147 04.0	-51 40.5	-145 57.7	-51 14.0	-145 13.6

DURATION OF TOTAL PHASE AND WIDTH OF PATH ON CENTRAL LINE

Universal Time	10,000 Feet		20,000 Feet		30,000 Feet		40,000 Feet	
	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path
h m	m s	mi	m s	mi	m s	mi	m s	mi
3 49	3 14.5	158	3 15.6	159	3 16.7	159	3 17.7	159
50	3 24.4	162	3 25.1	162	3 25.7	162	3 26.4	162
51	3 31.2	164	3 31.7	164	3 32.3	164	3 32.8	164
52	3 36.8	167	3 37.3	167	3 37.7	167	3 38.2	167
53	3 41.7	169	3 42.1	169	3 42.6	169	3 43.0	169
3 54	3 46.1	170	3 46.5	171	3 46.9	171	3 47.3	171
56	3 54.0	174	3 54.4	175	3 54.7	174	3 55.1	174
58	4 01.0	178	4 01.3	178	4 01.6	178	4 02.0	177
4 00	4 07.3	181	4 07.6	181	4 07.9	181	4 08.2	180
05	4 20.9	188	4 21.1	188	4 21.4	188	4 21.7	187
10	4 32.2	194	4 32.5	194	4 32.8	194	4 33.0	195
15	4 41.7	201	4 42.0	200	4 42.3	200	4 42.6	200
20	4 49.7	205	4 50.0	205	4 50.3	206	4 50.5	205
25	4 56.3	210	4 56.5	209	4 56.8	210	4 57.1	210
4 30	5 01.4	213	5 01.7	213	5 01.9	213	5 02.2	213
35	5 05.2	216	5 05.5	216	5 05.8	215	5 06.0	215
40	5 07.8	217	5 08.0	217	5 08.3	217	5 08.5	217
45	5 09.0	217	5 09.2	217	5 09.5	217	5 09.7	217
50	5 08.9	216	5 09.2	216	5 09.4	216	5 09.7	215
55	5 07.6	214	5 07.8	213	5 08.1	214	5 08.3	214
5 00	5 04.9	211	5 05.2	211	5 05.4	210	5 05.7	210
05	5 01.0	207	5 01.2	207	5 01.5	207	5 01.8	206
10	4 55.8	203	4 56.0	203	4 56.3	202	4 56.5	203
15	4 49.2	198	4 49.5	198	4 49.7	198	4 50.0	198
20	4 41.3	193	4 41.5	193	4 41.8	193	4 42.1	193
25	4 31.8	187	4 32.1	187	4 32.3	187	4 32.6	187
5 30	4 20.5	182	4 20.8	182	4 21.1	182	4 21.4	182
32	4 15.4	179	4 15.7	179	4 16.0	179	4 16.3	179
34	4 10.0	177	4 10.3	177	4 10.6	177	4 10.9	177
36	4 04.0	174	4 04.3	175	4 04.6	175	4 05.0	175
38	3 57.4	172	3 57.7	172	3 58.1	171	3 58.4	172
40	3 49.9	169	3 50.3	169	3 50.7	169	3 51.1	169
5 42	3 41.3	167	3 41.7	167	3 42.2	166	3 42.6	166
43	3 36.2	165	3 36.7	165	3 37.2	164	3 37.7	164
44	3 30.3	163	3 30.9	163	3 31.4	163	3 32.0	163
45	3 22.7	161	3 23.5	161	3 24.3	161	3 25.0	161
46	. .. .	...	3 09.5	157	3 12.1	157	3 13.9	158

CENTRAL LINE OF TOTAL PHASE

Universal Time	80 Km		100 Km		200 Km		300 Km	
	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
h m	° ′	° ′	° ′	° ′	° ′	° ′	° ′	°
3 41	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	-39 57.0	- 63 45.
42	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	38 29.3	66 52.
43	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	37 29.8	69 00.
44	.. .. .	... .. .	.. .. .	... .. .	-40 20.2	- 65 05.6	36 42.7	70 43.
45	.. .. .	... .. .	.. .. .	... .. .	39 04.3	67 47.8	36 03.1	72 11.
46	.. .. .	... .. .	-43 07.3	- 61 32.4	38 09.2	69 47.2	35 28.7	73 28.
3 48	-40 36.4	- 67 19.9	-39 48.2	- 68 34.0	-36 46.8	- 72 49.8	-34 30.6	- 75 41.
50	38 48.3	71 14.9	38 13.1	72 02.8	35 44.1	75 13.2	33 42.5	77 35.
52	37 33.8	74 02.6	37 04.2	74 39.4	34 53.0	77 14.2	33 01.3	79 16.
54	36 35.6	76 18.5	36 09.3	76 48.7	34 09.8	79 00.1	32 25.6	80 47.
56	35 47.7	78 15.0	35 23.6	78 40.8	33 32.6	80 35.3	31 54.1	82 11.
58	35 07.1	79 58.1	34 44.6	80 20.7	33 00.0	82 02.2	31 26.1	83 29.
4 00	-34 31.9	- 81 31.4	-34 10.7	- 81 51.5	-32 31.3	- 83 22.6	-31 01.2	- 84 41.
05	33 21.7	84 54.7	33 02.7	85 10.3	31 32.4	86 22.2	30 09.4	87 25.
10	32 29.8	87 49.0	32 12.1	88 01.6	30 48.0	89 00.0	29 29.9	89 52.
15	31 51.2	90 24.4	31 34.5	90 34.6	30 14.6	91 22.7	29 00.0	92 06.
20	31 23.2	92 46.5	31 07.2	92 54.9	29 50.4	93 34.5	28 38.3	94 10.
25	31 04.2	94 59.0	30 48.7	95 05.9	29 34.0	95 38.4	28 23.8	96 08.
4 30	-30 53.0	- 97 04.6	-30 37.8	- 97 10.1	-29 24.6	- 97 36.3	-28 15.6	- 98 00.
35	30 48.9	99 05.3	30 33.9	99 09.6	29 21.6	99 30.0	28 13.5	99 48.
40	30 51.4	101 02.5	30 36.5	101 05.7	29 24.7	101 20.8	28 17.0	101 34.
45	31 00.4	102 57.8	30 45.5	102 59.9	29 33.7	103 09.8	28 25.9	103 19.
50	31 15.6	104 52.4	31 00.6	104 53.4	29 48.4	104 58.2	28 40.2	105 02.
55	31 37.2	106 47.4	31 22.0	106 47.4	30 09.0	106 47.0	29 00.0	106 46.
5 00	-32 05.3	-108 44.2	-31 49.9	-108 43.0	-30 35.5	-108 37.4	-29 25.4	-108 32.
05	32 40.4	110 44.2	32 24.6	110 41.8	31 08.3	110 30.4	29 56.6	110 20.
10	33 23.1	112 48.9	33 06.7	112 45.2	31 48.0	112 27.5	30 34.1	112 11.
15	34 14.2	115 00.5	33 57.1	114 55.2	32 35.2	114 30.5	31 18.5	114 08.
20	35 15.2	117 21.7	34 57.2	117 14.6	33 30.9	116 41.5	32 10.6	116 11.
25	36 28.1	119 56.5	36 08.8	119 47.1	34 36.8	119 03.5	33 11.7	118 24.
5 30	-37 56.3	-122 51.0	-37 35.2	-122 38.5	-35 55.3	-121 41.1	-34 23.8	-120 50.
35	39 45.8	126 16.1	39 21.9	125 58.9	37 30.3	124 41.6	35 49.7	123 35.
40	42 09.6	130 34.9	41 40.7	130 09.3	39 29.4	128 18.7	37 34.7	126 48.
5 42	-43 23.2	-132 45.3	-42 50.8	-132 13.9	-40 26.9	-130 01.6	-38 24.1	-128 17.
44	44 53.1	135 24.1	44 15.2	134 43.0	41 32.8	131 58.6	39 19.1	129 55.
46	46 53.4	138 57.5	46 04.2	137 56.1	42 50.6	134 16.2	40 21.6	131 46.
48	-50 52.9	-146 12.4	-48 58.8	-143 10.1	44 27.5	137 08.2	41 34.3	133 55.
5 49	.. .. .	... .. .	.. .. .	... .. .	-45 28.3	-138 56.9	-42 16.1	-135 09.
50	.. .. .	... .. .	.. .. .	... .. .	46 44.8	141 14.8	43 02.8	136 32.
51	.. .. .	... .. .	.. .. .	... .. .	-48 39.6	-144 45.3	43 56.4	138 08.
52	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	45 00.6	140 03.
53	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	46 23.9	142 35.
54	.. .. .	... .. .	.. .. .	... .. .	.. .. .	... .. .	-48 50.2	-147 09.

DURATION OF TOTAL PHASE AND WIDTH OF PATH ON CENTRAL LINE

Universal Time	80 Km		100 Km		200 Km		300 Km	
	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path	Duration	Width of Path
h m	m s	mi	m s	mi	m s	mi	m s	mi
3 41	. .. .	...	. .. .	...	. .. .	...	3 17.6	146
42	. .. .	...	. .. .	...	. .. .	...	3 27.1	149
43	. .. .	...	. .. .	...	. .. .	...	3 34.1	152
44	. .. .	...	. .. .	...	3 20.8	151	3 39.9	154
45	. .. .	...	. .. .	...	3 29.0	154	3 45.1	156
46	. .. .	...	3 10.4	152	3 35.4	156	3 49.9	158
3 48	3 26.2	158	3 30.2	159	3 45.8	160	3 58.4	160
50	3 38.4	163	3 41.4	163	3 54.5	163	4 06.1	163
52	3 47.7	167	3 50.3	167	4 02.2	167	4 13.0	166
54	3 55.7	170	3 58.1	170	4 09.1	169	4 19.4	168
56	4 02.8	173	4 05.0	173	4 15.5	172	4 25.5	172
58	4 09.2	177	4 11.3	176	4 21.4	175	4 31.1	173
4 00	4 15.2	180	4 17.2	179	4 26.9	177	4 36.4	176
05	4 28.2	186	4 30.0	186	4 39.3	184	4 48.4	182
10	4 39.2	193	4 41.0	192	4 49.9	189	4 58.8	187
15	4 48.5	197	4 50.3	197	4 59.0	194	5 07.8	192
20	4 56.4	202	4 58.1	202	5 06.8	199	5 15.4	196
25	5 02.8	206	5 04.6	206	5 13.1	202	5 21.7	199
4 30	5 08.0	209	5 09.7	209	5 18.2	205	5 26.7	202
35	5 11.7	212	5 13.4	211	5 21.9	207	5 30.4	203
40	5 14.2	213	5 15.9	212	5 24.3	208	5 32.9	204
45	5 15.4	213	5 17.1	212	5 25.5	208	5 34.0	204
50	5 15.4	212	5 17.0	211	5 25.4	207	5 33.9	203
55	5 14.0	210	5 15.7	209	5 24.0	205	5 32.5	202
5 00	5 11.3	207	5 13.0	206	5 21.4	203	5 29.9	199
05	5 07.4	204	5 09.1	203	5 17.5	199	5 26.0	196
10	5 02.3	200	5 04.0	199	5 12.4	195	5 20.9	193
15	4 55.8	195	4 57.5	195	5 06.0	191	5 14.5	188
20	4 47.9	190	4 49.7	190	4 58.3	186	5 06.9	184
25	4 38.7	185	4 40.5	184	4 49.2	182	4 57.9	180
5 30	4 27.8	180	4 29.6	180	4 38.7	177	4 47.6	175
35	4 14.9	174	4 16.9	174	4 26.5	172	4 35.8	170
40	3 59.2	169	4 01.4	168	4 12.1	167	4 22.1	165
5 42	3 51.6	165	3 54.1	165	4 05.5	164	4 15.9	163
44	3 42.9	163	3 45.7	163	3 58.2	162	4 09.3	161
46	3 32.0	160	3 35.5	159	3 50.1	159	4 02.1	159
48	3 12.7	154	3 20.7	155	3 40.5	156	3 54.0	156
5 49	. .. .	...	. .. .	...	3 34.7	155	3 49.6	155
50	. .. .	...	. .. .	...	3 27.9	153	3 44.8	154
51	. .. .	...	. .. .	...	3 18.2	150	3 39.4	153
52	. .. .	...	. .. .	...	. .. .	...	3 33.3	151
53	. .. .	...	. .. .	...	. .. .	...	3 25.7	149
54	. .. .	...	. .. .	...	. .. .	...	3 13.3	146

LOCAL CIRCUMSTANCES FOR POINTS ON CENTRAL LINE

Central Line Universal Time	Central Line Latitude	Central Line Longitude	First Contact Universal Time	First Contact P	First Contact V	Second Contact Universal Time	Second Contact P	Second Contact V
h m	° ′	° ′	h m s	°	°	h m s	°	°
3 49	-43 38.6	- 62 55.9	•• •• •• •	•••	•••	3 47 21.9	88	229
50	41 47.5	66 49.6	•• •• •• •	•••	•••	3 48 16.6	88	229
51	40 41.0	69 12.2	•• •• •• •	•••	•••	3 49 13.1	88	230
52	39 50.3	71 03.1	2 44 24.8	268	42	3 50 10.2	88	230
53	39 08.5	72 36.4	2 44 32.3	268	42	3 51 07.7	88	231
3 54	-38 32.5	- 73 58.0	2 44 44.6	268	42	3 52 05.5	89	232
56	37 32.6	76 18.3	2 45 19.2	268	43	3 54 01.4	89	233
58	36 43.7	78 17.9	2 46 02.9	268	43	3 55 57.9	89	234
4 00	-36 02.4	- 80 03.5	2 46 53.1	268	44	3 57 54.7	89	235
05	34 41.8	83 47.7	2 49 18.2	269	45	4 02 47.9	90	238
10	33 43.5	86 55.7	2 52 03.7	269	47	4 07 42.1	91	242
15	33 00.6	89 41.1	2 55 04.4	270	49	4 12 37.3	91	245
20	32 29.6	92 11.1	2 58 18.4	270	52	4 17 33.3	92	249
25	32 08.5	94 30.2	3 01 44.5	271	54	4 22 29.9	93	253
4 30	-31 55.8	- 96 41.5	3 05 22.2	271	57	4 27 27.4	94	257
35	31 50.8	98 47.2	3 09 11.6	272	60	4 32 25.4	95	261
40	31 52.9	100 49.3	3 13 13.0	273	63	4 37 24.2	96	265
45	32 01.8	102 49.1	3 17 26.9	274	67	4 42 23.6	96	269
50	32 17.4	104 48.2	3 21 54.1	274	70	4 47 23.6	97	273
55	32 39.8	106 47.7	3 26 35.0	275	74	4 52 24.3	98	278
5 00	-33 09.1	-108 49.3	3 31 30.8	276	78	4 57 25.6	99	282
05	33 46.0	110 54.3	3 36 42.5	277	82	5 02 27.6	99	286
10	34 31.0	113 04.7	3 42 11.4	278	86	5 07 30.2	100	289
15	35 25.2	115 22.8	3 47 58.8	278	91	5 12 33.5	101	293
20	36 30.3	117 51.9	3 54 06.7	279	96	5 17 37.6	101	297
25	37 49.0	120 36.7	4 00 37.6	280	100	5 22 42.4	102	300
5 30	-39 25.4	-123 45.2	4 07 35.3	281	105	5 27 48.0	102	303
32	40 10.6	125 10.1	4 10 31.5	281	107	5 29 50.6	102	305
34	41 00.8	126 42.5	4 13 33.8	281	109	5 31 53.3	102	306
36	41 57.2	128 24.6	4 16 43.4	281	111	5 33 56.4	103	307
38	43 01.6	130 19.8	4 20 02.0	281	113	5 35 59.8	103	308
40	44 17.3	132 34.0	4 23 32.3	282	115	5 38 03.5	103	309
5 42	-45 50.8	-135 18.6	4 27 20.3	282	118	5 40 07.9	103	310
43	46 48.5	137 00.3	4 29 24.5	282	119	5 41 10.5	103	310
44	47 59.0	139 05.0	4 31 40.7	282	120	5 42 13.6	102	311
45	-49 35.4	-141 57.0	4 34 20.6	282	121	5 43 17.5	102	311

LOCAL CIRCUMSTANCES FOR POINTS ON CENTRAL LINE

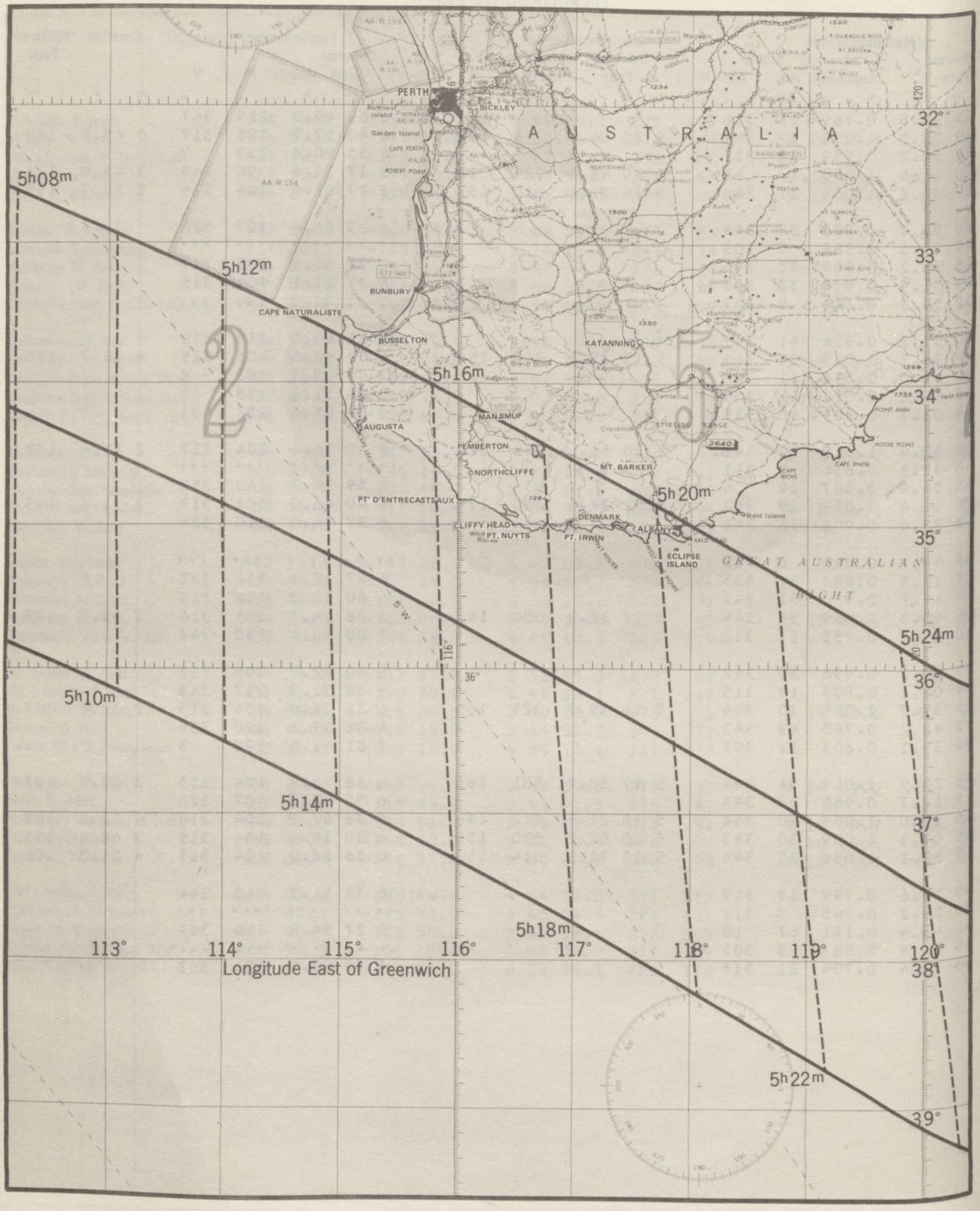
Maximum Eclipse: Universal Time	Magnitude	Sun's Alt.	Sun's Az.	Third Contact: Universal Time	Third Contact: P	Third Contact: V	Fourth Contact: Universal Time	Fourth Contact: P	Fourth Contact: V	Duration	Width of Path
h m s		°	°	h m s	°	°	h m s	°	°	m s	mi
3 49 00.0	1.050	3	53	3 50 38.1	268	49	4 58 58.4	89	238	3 16.2	158
3 50 00.0	1.051	7	50	3 51 43.4	268	50	5 02 18.5	89	240	3 26.8	162
3 51 00.0	1.052	9	48	3 52 46.9	268	50	5 04 49.5	89	242	3 33.8	164
3 52 00.0	1.053	11	47	3 53 49.8	268	51	5 07 02.8	89	243	3 39.6	166
3 53 00.0	1.053	12	46	3 54 52.3	268	51	5 09 06.1	90	245	3 44.6	169
3 54 00.0	1.054	14	44	3 55 54.5	269	52	5 11 02.3	90	246	3 49.0	170
3 56 00.0	1.054	16	42	3 57 58.6	269	53	5 14 40.4	90	248	3 57.2	174
3 58 00.0	1.055	18	41	4 00 02.1	269	55	5 18 04.6	91	250	4 04.2	178
4 00 00.0	1.055	20	39	4 02 05.3	269	56	5 21 18.5	91	253	4 10.6	181
4 05 00.0	1.057	23	35	4 07 12.1	270	59	5 28 50.0	92	258	4 24.2	188
4 10 00.0	1.057	26	32	4 12 17.9	271	63	5 35 45.3	93	264	4 35.8	195
4 15 00.0	1.058	28	28	4 17 22.7	271	66	5 42 12.1	94	269	4 45.4	201
4 20 00.0	1.059	30	25	4 22 26.7	272	70	5 48 14.5	95	274	4 53.4	206
4 25 00.0	1.059	31	21	4 27 30.1	273	74	5 53 55.7	96	278	5 00.2	210
4 30 00.0	1.059	33	18	4 32 32.6	274	78	5 59 17.6	97	283	5 05.2	213
4 35 00.0	1.060	34	14	4 37 34.6	275	82	6 04 22.4	98	287	5 09.2	216
4 40 00.0	1.060	34	11	4 42 35.8	276	87	6 09 11.1	98	291	5 11.6	217
4 45 00.0	1.060	34	7	4 47 36.4	276	91	6 13 45.4	99	295	5 12.8	217
4 50 00.0	1.060	34	3	4 52 36.4	277	95	6 18 06.1	100	299	5 12.8	216
4 55 00.0	1.060	34	0	4 57 35.7	278	99	6 22 14.3	100	302	5 11.4	214
5 00 00.0	1.060	33	356	5 02 34.4	279	103	6 26 10.7	101	305	5 08.8	211
5 05 00.0	1.060	33	353	5 07 32.4	279	107	6 29 56.0	102	308	5 04.8	208
5 10 00.0	1.059	31	349	5 12 29.8	280	111	6 33 30.2	102	310	4 59.6	203
5 15 00.0	1.059	30	345	5 17 26.5	281	114	6 36 53.6	102	312	4 53.0	198
5 20 00.0	1.058	28	342	5 22 22.4	281	118	6 40 05.5	103	314	4 44.8	193
5 25 00.0	1.058	26	338	5 27 17.6	282	121	6 43 05.0	103	316	4 35.2	188
5 30 00.0	1.057	23	334	5 32 12.0	282	124	6 45 49.6	103	318	4 24.0	182
5 32 00.0	1.057	21	333	5 34 09.4	282	125	6 46 50.2	103	318	4 18.8	179
5 34 00.0	1.056	20	331	5 36 06.7	282	126	6 47 47.2	103	318	4 13.4	177
5 36 00.0	1.056	18	329	5 38 03.6	283	128	6 48 39.5	103	319	4 07.2	174
5 38 00.0	1.055	16	327	5 40 00.2	283	129	6 49 26.2	103	319	4 00.4	172
5 40 00.0	1.054	14	325	5 41 56.5	283	129	6 50 04.7	103	319	3 53.0	170
5 42 00.0	1.054	12	323	5 43 52.1	283	130	6 50 30.8	103	319	3 44.2	166
5 43 00.0	1.053	10	321	5 44 49.5	283	131	6 50 36.2	103	319	3 39.0	165
5 44 00.0	1.052	8	319	5 45 46.4	282	131	•• •• •• •	•••	•••	3 32.8	162
5 45 00.0	1.052	6	317	5 46 42.5	282	131	•• •• •• •	•••	•••	3 25.0	161

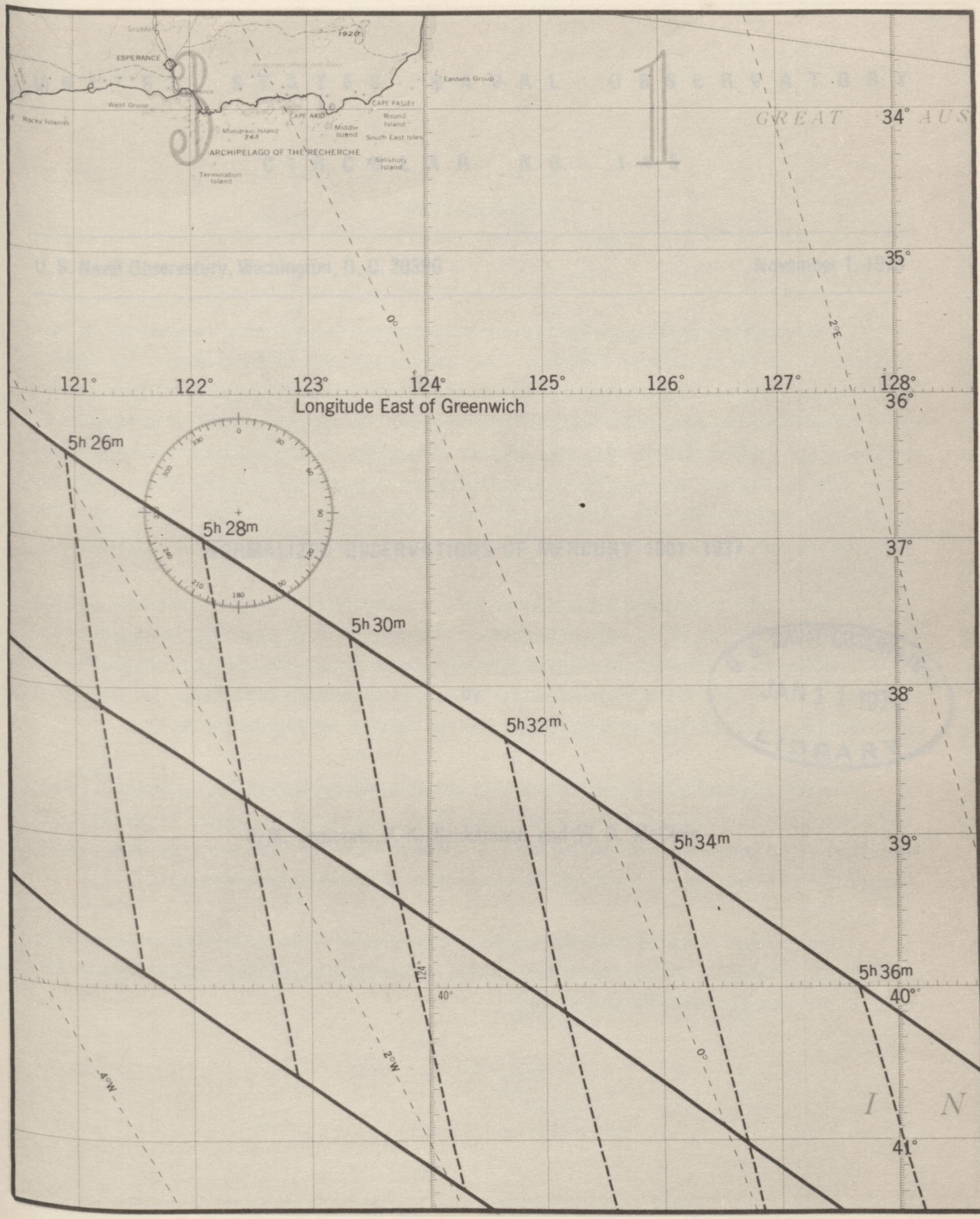
LOCAL CIRCUMSTANCES

Geographic Locations	Latitude	Longitude	First Contact Universal Time	P	V	Second Contact Universal Time	P	V
	° ′	° ′	h m s	°	°	h m s	°	°
Adelaide, S. Aust.	-34 56.0	-138 36.0	4 39 39.1	270	115			
Albany, W. Aust.	-34 57.0	-117 54.0	3 53 41.8	278	94	5 19 59.5	21	217
Alice Springs, N. Terr., Aust.	-23 42.0	-133 52.0	4 37 53.2	258	105			
Amsterdam Island	-37 55.0	- 77 40.0	2 46 51.0	269	45	3 56 44.6	129	275
Augusta, W. Aust.	-34 19.0	-115 09.0	3 46 58.2	277	89	5 12 40.9	62	254
Bickley, W. Aust.	-32 01.0	-116 08.0	3 48 29.5	275	88			
Brisbane, Queensland, Aust.	-27 30.0	-153 00.0	5 16 11.6	247	115			
Bunbury, W. Aust.	-33 20.0	-115 34.0	3 47 34.2	276	88			
Busselton, W. Aust.	-33 43.0	-115 15.0	3 46 57.5	277	89			
Canberra, Aust. Capital Terr.	-35 18.0	-149 08.0	4 58 06.5	263	119			
Carnarvon, W. Aust.	-24 51.0	-113 45.0	3 40 29.4	267	73			
Cliffy Head, W. Aust.	-34 58.0	-116 24.0	3 50 10.7	278	92	5 15 11.8	68	262
Coonabarabran, New S. Wales, Aust.	-31 16.0	-148 41.0	5 02 30.6	258	117			
Culgoora, New S. Wales, Aust.	-30 19.0	-149 34.0	5 05 25.6	255	117			
Darwin, N. Terr., Aust.	-12 23.0	-130 44.0	4 43 28.9	241	93			
Denmark, W. Aust.	-34 54.0	-117 25.0	3 52 32.6	278	93	5 18 13.2	40	236
Devonport, Tasmania	-41 09.0	-146 16.0	4 47 22.5	272	121			
Djakarta, Java, Indonesia	- 6 08.0	-106 45.0	3 31 57.5	237	20			
Eclipse Island, W. Aust.	-35 08.0	-117 50.0	3 53 35.9	278	94	5 18 56.1	43	239
Geraldton, W. Aust.	-28 49.0	-114 36.0	3 43 36.4	272	81			
Hobart, Tasmania	-42 54.0	-147 18.0	4 47 07.4	273	121			
Kalgoorlie, W. Aust.	-30 49.0	-121 29.0	4 01 47.3	273	94			
Katanning, W. Aust.	-33 43.0	-117 32.0	3 52 27.1	277	92			
Manjimup, W. Aust.	-34 14.0	-116 06.0	3 49 11.5	277	90	5 15 47.6	32	226
Melbourne, Victoria, Aust.	-37 45.0	-144 58.0	4 48 40.3	269	119			
Mt. Barker, W. Aust.	-34 36.0	-117 37.0	3 52 55.2	277	93			
Mt. Gambier, S. Aust.	-37 51.0	-140 50.0	4 41 33.1	271	118			
Northcliffe, W. Aust.	-34 36.0	-116 04.0	3 49 15.2	278	91	5 14 47.6	57	251
Onslow, W. Aust.	-21 41.0	-115 12.0	3 44 32.2	263	71			
Parkes, New S. Wales, Aust.	-33 10.0	-148 13.0	4 59 13.1	261	118			
Pemberton, W. Aust.	-34 27.0	-115 59.0	3 48 59.8	277	91	5 14 49.0	51	245
Perth, W. Aust.	-31 58.0	-115 49.0	3 47 41.5	275	87			
Pt. d'EntreCasteaux, W. Aust.	-34 50.0	-115 56.0	3 49 01.7	278	91	5 14 08.7	70	264
Pt. Irwin, W. Aust.	-35 03.0	-116 50.0	3 51 13.4	278	92	5 16 13.6	63	258
Pt. Nuyts, W. Aust.	-35 02.0	-116 32.0	3 50 30.9	278	92	5 15 27.9	68	262
Port Lincoln, S. Aust.	-34 43.0	-135 49.0	4 34 11.0	271	113			
Queenstown, Tasmania	-42 07.0	-145 33.0	4 45 24.9	273	121			
Singapore, Singapore	+ 1 20.0	-103 50.0	3 44 18.4	218	353			
Sydney, New S. Wales, Aust.	-33 55.0	-151 10.0	5 03 07.4	259	119			
Woomera, S. Aust.	-31 11.0	-136 54.0	4 38 58.2	266	112			

LOCAL CIRCUMSTANCES

Maximum Eclipse: Universal Time	Magnitude	Sun's Alt.	Sun's Az.	Third Contact: Universal Time	Third Contact: P	Third Contact: V	Fourth Contact: Universal Time	Fourth Contact: P	Fourth Contact: V	Duration	Width of Path
h m s		°	°	h m s	°	°	h m s	°	°	m s	mi
5 53 29.5	0.769	17	316				6 59 45.0	119	347		
5 20 22.0	1.059	29	341	5 20 44.5	3	199	6 40 57.7	105	317	0 45.0	193
5 50 50.2	0.559	28	317				6 55 50.4	133	7		
3 58 16.6	1.055	17	41	3 59 48.5	229	15	5 17 35.6	90	249	3 03.9	178
5 14 36.2	1.059	31	346	5 16 31.6	320	153	6 37 02.4	104	314	3 50.7	199
5 16 54.7	0.958	33	344				6 39 26.4	107	320		
6 09 25.5	0.388	9	303				.. ..	...	...		
5 15 35.2	0.989	32	345				6 38 06.3	105	317		
5 14 51.9	0.998	32	345				6 37 27.1	104	315		
6 02 59.3	0.644	9	307				.. ..	...	...		
5 10 51.2	0.826	41	347				6 35 49.0	115	330		
5 17 13.7	1.059	30	344	5 19 15.5	315	150	6 38 42.5	104	315	4 03.7	196
6 04 54.0	0.548	11	306				7 01 18.1	133	8		
6 05 59.8	0.511	11	305				7 00 51.1	135	12		
5 44 03.7	0.301	40	315				6 39 05.0	152	31		
5 19 22.4	1.059	30	342	5 20 31.6	343	179	6 40 16.6	104	317	2 18.4	193
5 56 32.3	0.816	8	311				.. ..	...	...		
4 45 54.9	0.387	60	4				5 59 39.7	140	350		
5 20 11.8	1.059	29	342	5 21 27.5	340	177	6 40 46.5	104	317	2 31.4	193
5 13 23.0	0.906	36	346				6 37 34.0	110	324		
5 55 49.7	0.842	6	310				.. ..	...	...		
5 28 19.9	0.883	31	335				6 47 12.8	112	332		
5 19 47.2	0.980	31	342				6 40 58.2	106	319		
5 16 40.3	1.059	31	344	5 17 32.9	350	185	6 38 34.7	104	316	1 45.3	197
5 58 03.7	0.755	11	311				7 00 43.2	120	348		
5 19 50.2	0.996	30	342				6 40 42.7	105	318		
5 54 07.1	0.808	13	315				6 59 31.7	117	343		
5 16 33.7	1.059	30	344	5 18 19.7	325	160	6 38 21.9	104	315	3 32.1	197
5 13 48.2	0.740	43	343				6 36 57.8	120	339		
6 03 34.1	0.603	11	307				7 01 41.5	129	3		
5 16 23.9	1.059	31	344	5 17 58.7	331	166	6 38 18.2	104	315	3 09.7	197
5 16 12.7	0.960	33	344				6 38 57.5	107	320		
5 16 15.0	1.059	30	344	5 18 21.3	312	146	6 38 02.9	104	314	4 12.6	197
5 18 07.9	1.059	30	343	5 20 02.2	320	155	6 39 19.8	104	315	3 48.6	195
5 17 30.1	1.059	30	344	5 19 32.2	314	150	6 38 52.9	104	315	4 04.3	196
5 50 16.6	0.799	19	319				6 58 31.7	118	344		
5 55 09.2	0.845	8	312				.. ..	...	...		
4 35 46.4	0.171	67	18				5 27 54.8	155	349		
6 05 13.9	0.583	8	305				.. ..	...	...		
5 53 13.4	0.704	21	316				6 59 33.9	124	353		


AUSTRALIA
PERTH
BICKLEY
BUNBURY
CAPE NATURALISTE
BUSSELTON
AUGUSTA
MANJIMUP
PEMBERTON
NORTHCLIFFE
PT D'ENTRECASTEAUX
CLIFFY HEAD
PT. NUYTS
DENMARK
ALBANY
PT. IRWIN
ECLIPSE ISLAND
KATANNING
MT. BARKER
STIRLING RANGE
3640
GREAT AUSTRALIAN BIGHT
5h08m
5h10m
5h12m
5h14m
5h16m
5h18m
5h20m
5h22m
5h24m
32°
33°
34°
35°
36°
37°
38°
39°
113°
114°
115°
116°
117°
118°
119°
120°
Longitude East of Greenwich


ESPERANCE
West Group
Rocky Islands
Eastern Group
CAPE PASLEY
CAPE ARID
Round Island
Middle Island
South East Islet
Mondrain Island
743
ARCHIPELAGO OF THE RECHERCHE
Termination Island
Salisbury Island
0°
2°E
121°
122°
123°
124°
125°
126°
127°
128°
Longitude East of Greenwich
34°
35°
36°
37°
38°
39°
40°
41°
5h 26m
5h 28m
5h 30m
5h 32m
5h 34m
5h 36m
4°W
2°W
0°
124°